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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,353	10/18/2000	James W. Adkisson	BUR9-1999-0300-US1	3972

7590 01/16/2002

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EXAMINER

COLLINS, DEVEN M

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 01/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/691,353

Applicant(s)

ADKISSON ET AL.

Examiner

D. M. Collins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 2-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 14-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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## **DETAILED ACTION**

### ***Election/Restriction***

1. Applicant's election without traverse of Group I, claims 14-23 in Paper No. 6 is acknowledged.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 14-23 are rejected under 35 U.S.C. 102(b) as being unpatentable over Neudeck et al. (5,273,921, dated 12/28/93).

Neudeck et al. show the method as claimed in the Figures 1-3 with corresponding text. In re claim 14, Neudeck et al. disclose a method for forming a double gated field effect transistor (FET), comprising the steps of:

forming on a substrate 11 a first and a second epitaxially grown channels;

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etching areas within a silicon layer to form a source 31 and a drain 32, wherein a side surface of the source 33 and the drain 34 contact opposing end surfaces of the first and second epitaxially grown channels;

and forming a gate (14, 20) that contacts a top surface and two side surfaces of the first and second epitaxially grown channels and a top surface of the substrate 11.

In re claim 15, Neudeck et al. disclose the method as recited in claim 14, wherein the forming step comprises the steps of:

forming first and second silicon lines, each end of the silicon lines contact an end of the source 31 and the drain 32 ;

forming an etch stop layer 16 on an exposed side surface of each of the first and second silicon lines;

epitaxially growing first and second silicon layers on each etch stop layer 16 ;

etching away the first and second silicon lines and etch stop layers 16;

filling areas surrounding the first and second epitaxially grown silicon layers and between the source 31 and the drain 32 with an oxide fill;

etching a portion of the oxide fill to form an area that defines a gate,

wherein the area that defines the gate (14, 20) is substantially centered between and substantially parallel to the source 31 and the drain 32 ;  
and depositing a material to form a gate.

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In re claim 16, Neudeck et al. disclose the method as recited in claim 15, further comprising the steps of:  
etching the oxide fill between the gate the source to expose the first and second epitaxially grown silicon layers;  
and etching the oxide fill between the gate (14, 20) and the drain 32 to expose the first and second epitaxially grown silicon layers.

In re claim 17, Neudeck et al. disclose the method as recited in claim 16, further comprising the step of forming an oxide on the first and second epitaxially grown silicon layers.

In re claim 18, Neudeck et al. disclose the method as recited in claim 17, wherein the oxide is silicon dioxide (20, 21, 22).

In re claim 19, Neudeck et al. disclose the method as recited in claim 16, further comprising the steps of:  
implanting a portion of the epitaxially grown silicon layers between the gate 20 and the source 31;  
and implanting a portion of the epitaxially grown silicon layers between the gate 20 and the drain 32.

In re claim 20, Neudeck et al. disclose the method as recited in claim 18, wherein the implanting step is in the range of 10 to 45 degrees relative to a vector perpendicular to a top surface of the epitaxially grown silicon layers (20, 21, 22).

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In re claim 21, Neudeck et al. disclose the method as recited in step 14, wherein the implants (33, 34) are done in a series at approximately 90 degrees relative to each other.

In re claim 22, Neudeck et al. disclose the method as recited in claim 14, further comprising the step of forming a contact (33, 34) on each of the gate (14, 20), the source 31 and the drain 32.

In re claim 23, Neudeck et al. disclose the method as recited in claim 14, wherein the gate (14, 20) material is polysilicon.

### *Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Deven M. Collins whose telephone number is (703) 305-7840.

The examiner can normally be reached on Monday-Friday from 6:30 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy, can be reached on (703) 308-4918. The fax phone number for this Group is (703) 305-3432.

Serial Number: 09/691353

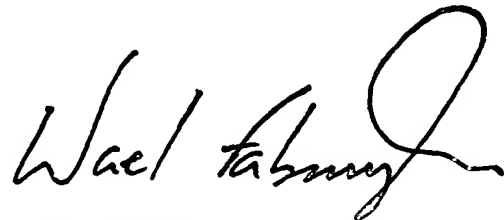
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

DMC

January 14, 2002

A handwritten signature in black ink, appearing to read "Wael Tabany". The signature is fluid and cursive, with a large loop at the end.

SUPERVISORY PRIMARY EXAMINER  
TECHNOLOGY CENTER